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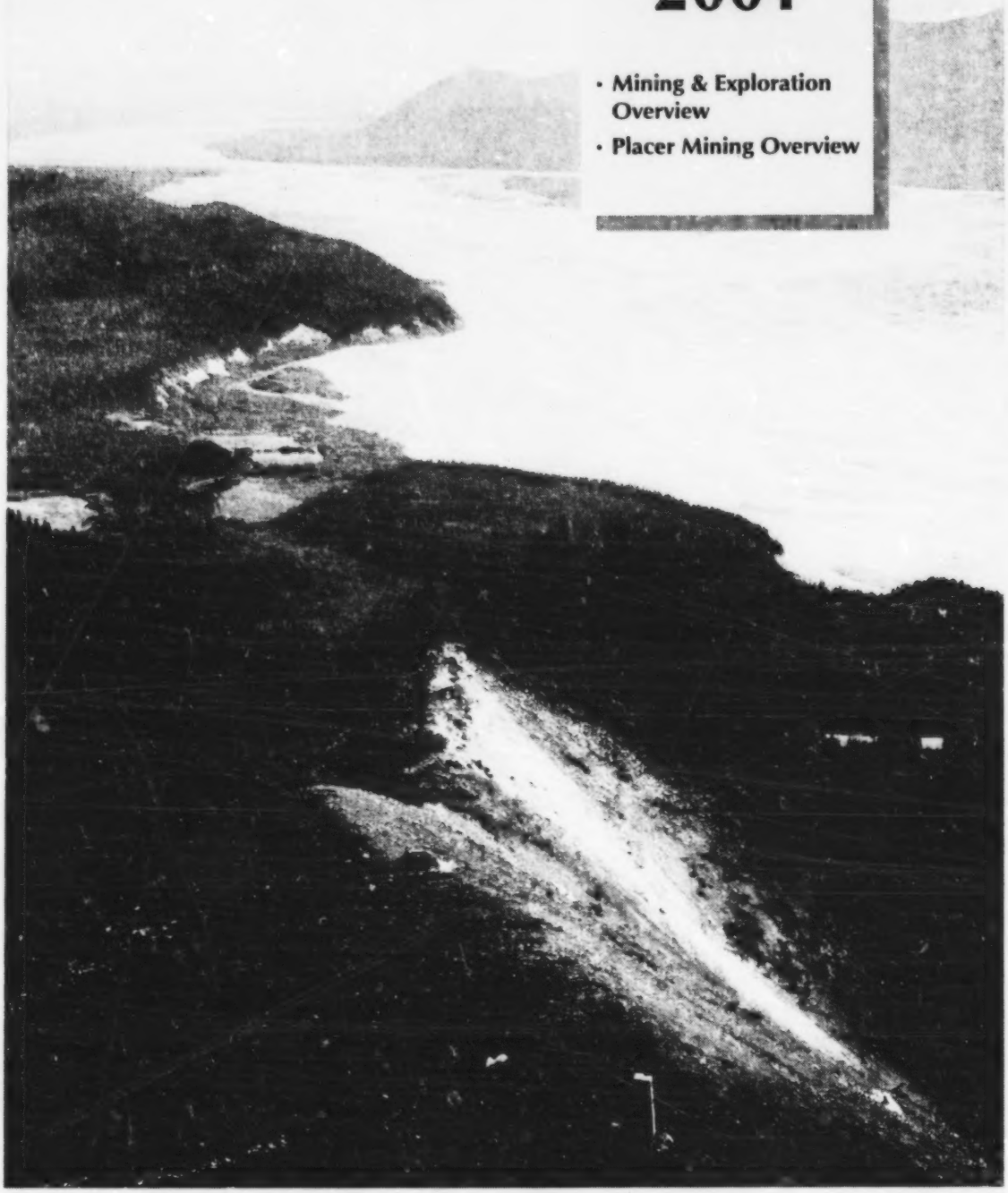
Exploration and Geological Services Division, Yukon Region

YUKON
EXPLORATION & GEOLOGY
2001

- Mining & Exploration Overview
- Placer Mining Overview



Yukon Government

YUKON GEOLOGY PROGRAM

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Front cover photo
Quartz-carbonate alteration at the Sax showing defines the footwall contact of the White River intrusive complex, the second largest mafic-ultramafic body located in the Kluane Mafic-Ultramafic Belt. The Sax showing is located on the Canalask-Onion property, one of several properties in the belt being explored for their platinum group elements (PGE) potential. Photo by Mike Burke.

Back cover photo
Jim Dodge (right), 2001 Yukon Prospector of the Year, receiving his award from Larry Carlyle of the Yukon Prospectors Association, at the Whitehorse Geoscience Forum, November, 2001. Photo by, and courtesy of, Whitehorse Star.

MINERAL INDUSTRY

Yukon Mining and Exploration Overview, 2001

Mike Burke
Yukon Geology Program

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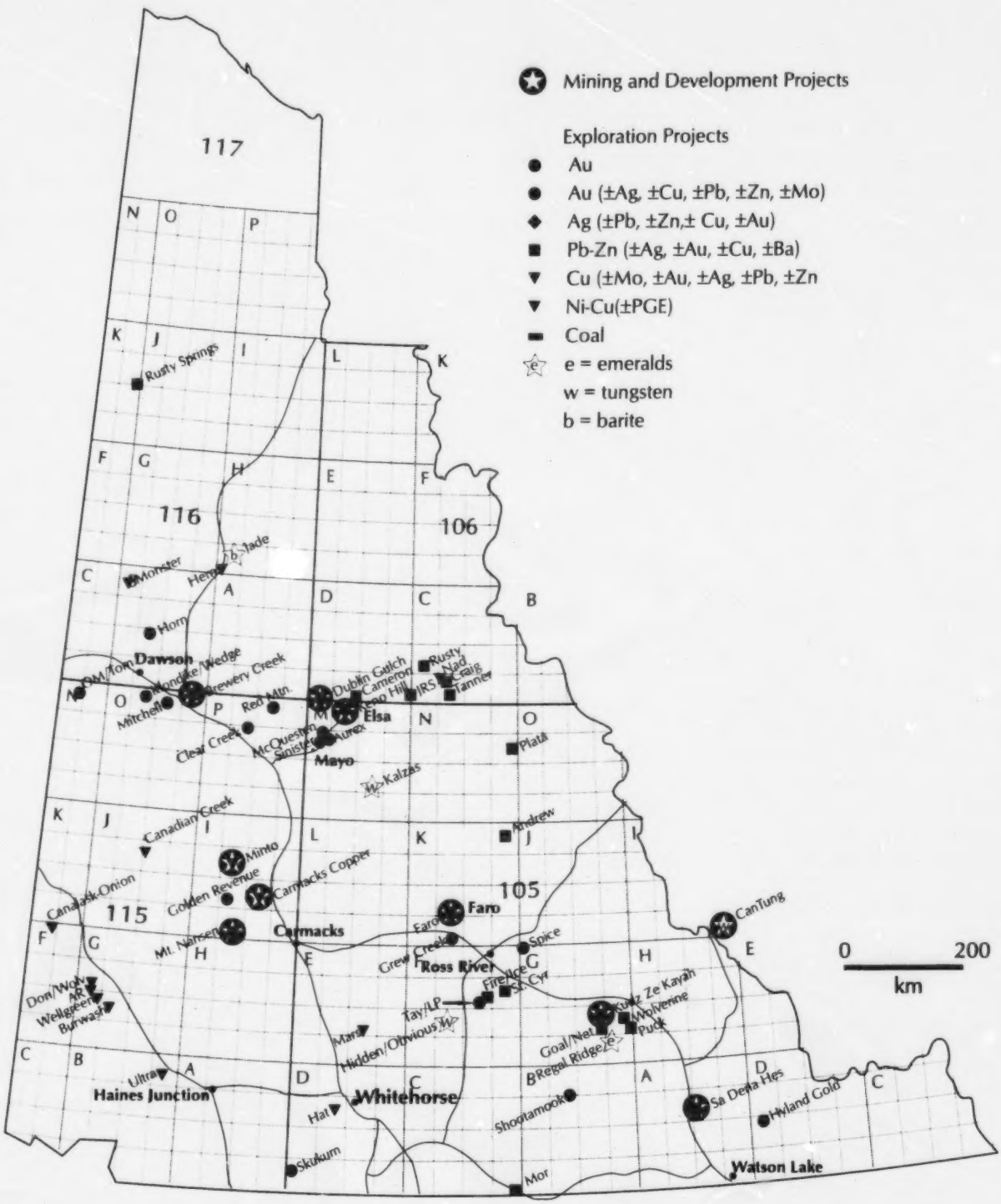

Figure 1. *Location of active Yukon mines, development and exploration projects in 2001. Not all projects are shown on the map. Background of the map shows the National Topographic System (NTS) grid.*

YUKON MINING AND EXPLORATION OVERVIEW, 2001

Mike Burke[1]
Yukon Geology Program

Burke, M., 2002. Yukon Mining and Exploration Overview, 2001. *In:* Yukon Exploration and Geology 2001, D.S. Emond, L.H. Weston and L.L. Lewis, (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 2-25.

RÉSUMÉ

L'exploration minérale n'a pas repris en 2001; on avait peu investi dans l'exploration en 2000, et cette tendance se poursuit cette saison. On estime les investissements dans l'exploration à 7,2 millions de dollars. La faiblesse des prix des produits, le manque constant de spéculation dans le secteur des petites sociétés minières et les fusions ainsi que les compressions dans les grandes sociétés minières ont entravé toute reprise. L'exploration s'est encore concentrée sur un vaste éventail de modèles de gisements et de produits; les métaux communs ayant reçus autant d'attention que les métaux précieux. Les métaux précieux auxquels on s'est intéressé sont, entre autres, des gisements d'or associés à des intrusions, dans la ceinture aurifère de Tintina, une minéralisation épithermale en or aux environs du gisement Grew Creek, dans la partie centrale du Yukon, une minéralisation en or à contrôle structural, dans le district de la rivière Wheaton près de Whitehorse, et des éléments du groupe platine (ÉGP), dans la ceinture ultramafique de Kluane. Les métaux communs auxquels on s'est intéressé sont, entre autres, des sulfures massifs volcanogènes polymétalliques, dans le district du lac Finlayson, des gisements sédimentaires exhalatifs ainsi que des gisements de substitution de zinc et plomb, dans le bassin de Selwyn, des gisements porphyriques de cuivre et d'or, dans la partie centrale du Yukon et près de Whitehorse, des gisements de cuivre et or associés à de l'oxyde de fer, dans les monts Ogilvie, et des gisements de tungstène, dans le bassin de Selwyn. L'or a été le produit principal visé par la moitié des douze petits programmes de forage exécutés en 2001. Les autres programmes de forage ont portés sur des métaux communs, en particulier le zinc et le cuivre, ainsi que les ÉGP.

La mine d'or Brewery Creek a été la seule mine en roche dure exploitée au Yukon en 2001. Pendant la première partie de l'année, on a poursuivi la lixiviation et extrait 10 811 onces d'or de cette mine, à un coût d'exploitation au comptant de 199 $US l'once. Depuis son ouverture en 1996, on a extrait un total de 263 139 onces d'or de la mine Brewery Creek. L'exploitation saisonnière de la mine Brewery Creek a été interrompue et ne reprendra pas tant que le prix de l'or n'aura pas augmenté.

La mise en valeur du gisement de cuivre Minto de la société Minto Explorations Ltd. et l'aménagement, vers la fin de l'année, de la mine d'argent Keno Hill de la société A.M.T. Canada. Inc. ont exigé des investissements d'environ 500 000 $. En octobre 2001, la société A.M.T Canada a acheté le site historique de la mine d'argent Keno

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Hill, qui se trouve dans la partie centrale du Yukon. En novembre, elle a conclu une alliance stratégique avec la société cotée en bourse Pacific Cart Services Ltd. du Nevada. Dans les Territoires du Nord-Ouest, la mine CanTung de la société North American Tungsten Corp. Ltd. est appelée à rouvrir en janvier 2002. C'est principalement au Yukon que se trouvent les moyens d'accéder à la mine et le soutien à l'exploitation. Le gouvernement du Yukon a signé une entente selon laquelle il s'engage à entretenir les routes et à appuyer la réouverture de la mine.

Le gouvernement du Yukon continue à favoriser le développement de l'industrie minière et à l'appuyer en augmentant à 850 000 $ le financement accordé pour la saison 2002 dans le cadre de son Programme d'encouragement des activités minières. Ce programme a pour objectif de fournir une partie du capital de risque nécessaire à la localisation de gisements minéraux au Yukon et à leur exploration. Le gouvernement du Yukon soutien également l'industrie, par le biais du crédit d'impôt à l'exploration minérale au Yukon, en remboursant 25 % de l'impôt perçu sur les investissements admissibles reliés à l'exploration. Le gouvernement du Yukon a récemment augmenté la durée de la période d'admissibilité au remboursement d'impôt, qui prendra maintenant fin le 31 mars 2003. D'autres initiatives ont été mises en œuvre pour aider l'industrie minière du Yukon, dont l'entente sur le transfert de responsabilités conclue en septembre 2001 par les négociateurs fédéraux, territoriaux et des Premières nations. Les négociateurs ont recommandé à leurs supérieurs de fixer la date d'entrée en vigueur de l'entente au premier avril 2003. L'entente porte sur le transfert au gouvernement du Yukon des responsabilités actuelles du gouvernement fédéral relatives à la gestion de la majeure partie des ressources naturelles du Yukon. Dès décembre 2001, 8 des 14 Premières nations étaient parvenues à des ententes sur les revendications territoriales et l'autonomie gouvernementale. Les négociations en vue de conclure les six dernières ententes vont bon train et devraient se terminer d'ici le premier avril 2002.

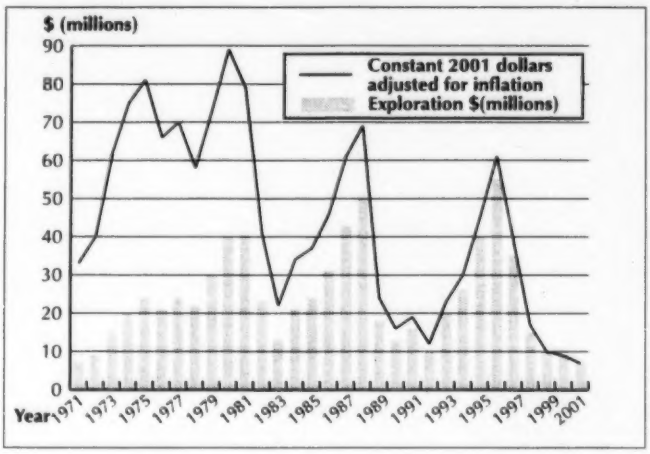

Figure 2. *Yukon exploration expenditures: 1971-2001.*

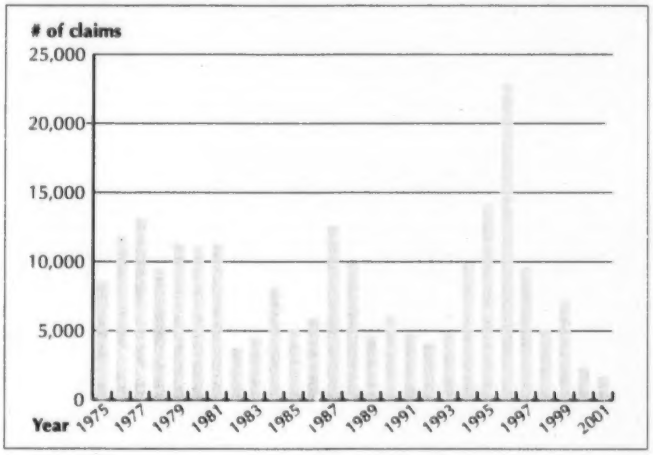

Figure 3. *Quartz claims staked: 1975-2001.*

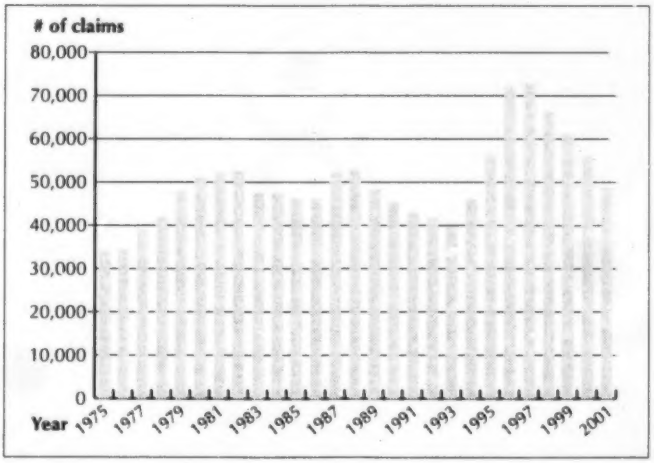

Figure 4. *Quartz claims in good standing: 1975-2001.*

INTRODUCTION

The map in Figure 1 shows the location of mineral properties active in 2001. Mineral exploration did not recover in 2001, and the low levels of exploration spending experienced in 2000 continued into this season. Exploration expenditures are estimated to be $7.2 million (Fig. 2). Poor commodity prices, the continued lack of speculative investors in the junior mining sector, and mergers and cutbacks in the senior mining industry hampered any recovery. Exploration continued to focus on a wide range of deposit models and commodities (Fig. 1), with approximately 60% of expenditures directed towards base metals and the remainder towards precious metals. Some of the precious metal targets included intrusion-related gold deposits in the Tintina gold belt, epithermal gold mineralization in the vicinity of the Grew Creek deposit in central Yukon, structurally controlled gold mineralization in the Wheaton River district near Whitehorse, and platinum group elements (PGEs) in the Kluane Mafic-Ultramafic Belt. Base metal targets included polymetallic volcanogenic massive sulphides in the Finlayson Lake district, sedimentary-exhalative and replacement zinc-lead deposits in the Selwyn Basin, porphyry copper-gold deposits in central Yukon and near Whitehorse, iron-oxide-associated copper-gold deposits in the Ogilvie Mountains, and tungsten occurrences in the Selwyn Basin. One half of the dozen small drill programs conducted during 2001 were directed at gold as the primary commodity. The remaining drill programs targeted base metals, mainly zinc, copper, and PGEs. The amount of claim staking in Yukon continued to decline with only 1720 claims staked in 2001 (Fig. 3) and a resulting decrease in claims in good standing to 48,982 (Fig. 4).

The Brewery Creek gold mine was Yukon's only operating hard rock mine in 2001. Heap leaching continued at the mine with production of 336 kg (10,811 ounces) of gold in the first half of the year, at a cash operating cost of US$199 per ounce. Total gold production at Brewery Creek has been 8185 kg (263,139 ounces) since the mine opened in 1996. Seasonal mining has been discontinued at Brewery Creek and will not resume unless gold prices increase.

Mine development expenditures of approximately $500,000 were incurred at the Minto copper deposit of Minto Explorations, and late in the year at the Keno Hill silver mine of A.M.T. Canada Inc. A.M.T. Canada purchased the historic Keno Hill silver mine in central Yukon in October of 2001. They subsequently formed a strategic alliance with the publicly traded company Pacific Cart Services Ltd. of Nevada in November. The CanTung mine of North American Tungsten Corp. Ltd., located in the Northwest Territories, is slated for reopening in January, 2002. Access to the mine and support for the operation is dominantly Yukon based. The Yukon government has signed a road maintenance agreement to support the reopening.

The Yukon government continued to support and encourage the mining industry by increasing funding in the Yukon Mining Incentive Program to $850,000 for the 2002 season. The function of the program is to provide a portion of the risk capital required to locate and explore for mineral deposits in Yukon. The Yukon Government also supports the industry through the Yukon Mineral Exploration Tax Credit, which provides a 25% tax refund on eligible exploration expenditures. The Yukon government recently extended the eligibility period of the tax credit to March 31, 2003. Other developments, which will help the Yukon's mining industry, include the initialing of the Devolution Transfer Agreement in September, 2001 by

federal, territorial and First Nation negotiators. The negotiators have recommended to their Principals that the effective date of devolution be April 1, 2003. Devolution is the transfer of the federal government's current responsibilities for managing most of the Yukon's natural resources to the Government of Yukon. As of December 2001, 8 of 14 Yukon First Nations had reached land claim and self-government agreements. Negotiations on the remaining six agreements are progressing well, with a target completion date of April 1, 2002.

MINING AND DEVELOPMENT

The **Brewery Creek gold mine** (Yukon MINFILE, 2001, 116B 160) was Yukon's only operating hard rock mine in 2001. The mine is a bulk tonnage, heap leach operation located 57 km east of Dawson City. Intrusive-related gold mineralization is hosted by intrusions of the mid-Cretaceous Tombstone Plutonic Suite, and Silurian to Carboniferous clastic metasedimentary rocks of the Steel Formation and Earn Group. Heap leaching continued at the mine with production of 336 260 g (10,811 ounces) of gold in the first half of 2001 at a cash operating cost of US$199 per ounce. Production in 2000 was 1494.5 kg (48,048 ounces) at a cash operating cost of US$243 per ounce. Seasonal mining has been discontinued at Brewery Creek and will not resume without the onset of higher gold prices. Measured and indicated resources at Brewery Creek as of December 31, 2000 were 920 000 tonnes grading 1.43 g/t gold. Viceroy Resources continued to demonstrate their environmental stewardship of the mine with their ongoing program of reclamation. A substantial amount of reclamation work was conducted on five of the pit and waste rock areas (Fig. 5).

Mine development expenditures were incurred at the **Minto copper deposit** (Yukon MINFILE, 2001, 115I 021, 022) of Minto Explorations, and late in the year at the **Keno Hill silver mine** (Yukon MINFILE, 2001, 105M 001) of A.M.T. Canada. Work at the Minto site included geotechnical and environmental studies, finishing work in the camp facilities, and site work around the mill, camp and access road.

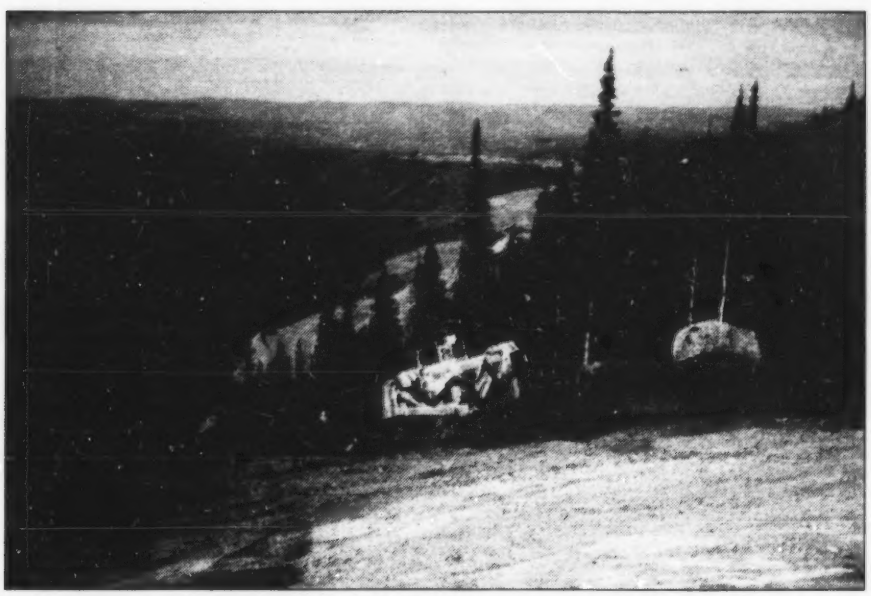

Figure 5. *Resloping of the backfilled Kokanee pit at the Brewery Creek mine.*

The Minto deposit is located 240 km northwest of Whitehorse and is being developed as a conventional open pit mine and milling operation. The deposit has a mineable reserve of 6.51 million tonnes grading 2.13% Cu, 0.62 g/t Au and 9.3 g/t Ag at a 4.9:1 strip ratio. The company has a mining venture agreement with ASARCO Inc. (a subsidiary of Grupo Mexico), under which ASARCO can acquire a 70% interest in the project in consideration for providing up to US$25 million for development of the project. Although the project is fully permitted and could be placed into production within one year, ASARCO did not commit sufficient funds in 2001 to complete development of the project. A 'confirmation' diamond-drilling program was approved by ASARCO Inc./Grupo Mexico for the Minto property in the 2001 season. Five HQ (63.5 mm) diamond-drill holes with a total length of 552 m were drilled (Fig. 6). Core size for the original drilling conducted in the 1970s was BQ (36.4 mm). Hole #2001-12 was drilled to provide a comparison of lower grade intercepts. The hole yielded an increase in the copper content of the main ore zone of 48.6%. A gold grade of 0.10 g/t was recorded for the main ore zone in hole #2001-12; no gold was recorded for this zone in the original 1974 hole #A101. Hole #2001-13 was drilled for comparison with a higher-grade intercept in angle hole #K09-73, a hole drilled by United Keno Hill Mines Ltd. in 1973. A comparison of the mineralized intercepts in these two holes showed an increase in the copper and gold contents of the main ore zone in hole #2001-13 of 17.8% and 45.2%, respectively. Additional holes were drilled to test a lower mineralized horizon located 15 - 24 m below the existing reserves, as well as to aid in detailed mine planning; results from these tests were encouraging. Hole #2001-08 intersected 1.27% Cu and 0.31 g/t Au over 16.9 m in the lower horizon. Hole #2001-14, drilled to test the southwest corner of the Phase 1 open pit, intersected an unexpected 22.3 m of 3.05% Cu, 2.06 g/t Au and 12.93 g/t Ag. These results indicate that the tonnage and grade of the current reserves will increase with the onset of mining.

A.M.T. Canada Inc. purchased the historic Elsa properties of United Keno Hill silver mine in central Yukon in October of 2001. The company formed a strategic alliance with the publicly traded company Pacific Cart Services Ltd. of Nevada in November.

Figure 6. *Jim Proc (second from right) of Minto Exploration reviews core from the confirmation drill program at the Minto project.*

The acquisition of the property and merger are significant steps in returning the historic mining camp to active production. Since the onset of production in 1914, the mines at Elsa have produced over 200 million ounces of silver at a historic camp grade of approximately 1370 g/t Ag (40 oz/ton Ag), from veins within Mississippian Keno Hill Quartzite. Proven and probable underground reserves at the mine currently stand at 415 000 tonnes grading 1145 g/t Ag, 7.5% Pb and 5.6% Zn.

The **CanTung mine** of North American Tungsten Corp. Ltd. is located in the Northwest Territories, 310 km northeast of Watson Lake, Yukon. Access to the mine is through the Yukon, and services and supplies for the operation will be dominantly Yukon based. The Yukon government has signed a road maintenance agreement to support reopening of the mine, which is slated for January of 2002. The Department of Community and Transportation Services will spend approximately $730,000 this year to reopen and upgrade the road to the Yukon/Northwest Territories border located at kilometre 188, and to maintain the road to kilometre 134. In addition, the Yukon government will incur expenditures of approximately $150,000 this year to strengthen the upper Frances River bridge to allow for higher gross vehicle weight crossing capacity. Beginning next year, the government will spend an estimated $450,000 annually to maintain the road year-round up to kilometre 134. North American Tungsten, in turn, will perform year-round maintenance from kilometre 134 to the mine site, a distance of approximately 70 km. The mine has a strategic alliance and supply contract agreement with Sandvik AB of Stockholm, Sweden and Osram Sylvania Products of Pennsylvania, USA to supply 900 000 MTUs (1 MTU = 10 kg) of ore over a three-year period. Cantung was the largest producer of tungsten in the western world with production beginning in 1962 and ending in 1986 when the mine was placed on a program of care and maintenance. Current mineable reserves at Cantung are 630 000 tonnes grading 1.82% WO_3.

EXPLORATION

The focus of exploration shifted slightly towards base metals in 2001 with 60% of the estimated $7.2 million spent on the search for zinc, lead, copper and tungsten. Projects directed towards nickel and copper with associated platinum group elements (PGEs) have been included in the precious metals section. Exploration for gold suffered the greatest downturn, with a reduction of 40% over the amount spent in 2000, however, exploration for PGEs increased substantially in 2001. The reduced expenditures are directly reflected in the amount and size of advanced projects involving diamond drilling that were conducted in 2001. Junior mining companies and/or prospectors spent 70% of the total expenditures in Yukon. Results from all the programs were generally good, but the continuing malaise in the markets denied junior companies the opportunity to expand their programs.

This overview highlights a number of exploration projects conducted in Yukon during the 2001 field season, and it is by no means a comprehensive review of all exploration carried out. Several projects have not been included because of restrictions on disclosure for publicly traded companies, and for competitive reasons, when companies and individuals choose to not openly share exploration results.

The amount of claim staking in Yukon continued to decline with only 1720 claims staked in 2001, and a resulting decrease in claims in good standing to 48,982.

BASE METALS

Expatriate Resources continued with their program of exploration on their extensive land holdings in the Finlayson Lake volcanogenic massive sulphide (VMS) district in 2001. Expatriate holds a 60% interest in the **Wolverine deposit** (Yukon MINFILE, 2001, 105G 072) with the remainder belonging to Atna Resources. The Wolverine deposit has an indicated resource of 4.941 million tonnes, containing a probable reserve of 3.47 million tonnes (calculated by Hatch and Associates in the 2000 prefeasibility study), grading 12.53% Zn, 1.44% Pb, 1.37% Cu, 336.6 g/t Ag and 1.59 g/t Au. Expatriate conducted drilling on the **Puck** (Yukon MINFILE, 2001, 105G 134) and **Goal Net** (Yukon MINFILE, 2001, 105G 123) properties with one 220-m hole on the Puck and nine holes totalling 1561 m on the Goal Net. Expatriate also conducted geophysical surveys consisting of Horizontal Loop Electromagnetics (HLEM) on the Goal Net and **Redline** (Yukon MINFILE, 2001, 105G 124) properties. Drilling on the Goal Net property (Fig. 7) yielded low-grade stratiform zinc mineralization over a 16-m interval within an argillaceous felsic tuff horizon in hole GN-01-5. The nearest drill hole, located 480 m away, failed to encounter zinc mineralization at a similar stratigraphic horizon. The nine holes completed on the Goal Net property have identified two altered and mineralized horizons over an area of approximately 5 km by 6 km. The predominantly felsic volcanic strata shows considerable similarity to the rocks hosting Teck Cominco's GP4F deposit (1.5 Mt at 6.4% Zn, 3.1% Pb, 0.1% Cu, 90 g/t Ag and 2.0 g/t Au) located 6 km to the north of the Goal Net property.

Expatriate also had a purchase agreement with Cominco to acquire the **Kudz Ze Kayah** (Yukon MINFILE, 2001, 105G 117) and **GP4F** (Yukon MINFILE, 2001, 105I 012) deposits and 2800 surrounding mineral claims. In late August, 2001, Expatriate terminated their acquisition agreement with Teck Cominco.

Figure 7. *Drill set-up on the Goal Net VMS property of Expatriate Resources.*

Fairfield Minerals conducted a small program at the **Mor** volcanogenic massive sulphide property near Teslin in southern Yukon (NTS 105C/1). The property is 7 km north of the Alaska Highway and is staked on Category B (surface rights) land of the Teslin Tlingit Council. The claims are underlain by rocks of the Big Salmon Complex in Yukon Tanana Terrane, which have been most recently studied by Mitch Mihalynuk of the British Columbia Geological Survey Branch. Property geology consists of rocks of volcanic origin, including chlorite schist, quartz-sericite schist and ryholite tuff. Slightly higher in the stratigraphy, but not located on the property, is the regionally extensive 'crinkle chert', a manganiferous meta-chert horizon. Field relations, including stratiform magnetite within the 'crinkle chert', as well as geochemical data, indicate a hydrothermal origin of the horizon (Mihalynuk and Peter, 2001). Work by Fairfield Minerals consisted of auger sampling (soil-profile and bedrock at 25 m x 5 m, or 10-m grid spacing), detailed prospecting, and local bedrock geological mapping (Fig. 8). Approximately 200 auger samples (from a maximum depth of 2.4 m) were collected and returned very good results. Bedrock samples returned up to 5.95 g/t Au, 171.4 g/t Ag, 10,665 ppm Pb, 2640 ppm Cu and 1350 ppm Zn. Soil samples within the multi-element geochemical anomaly returned values up to 1492 ppm Cu, 2062 ppm Pb, 2109 ppm Zn, 17.9 ppm Ag and 485 ppb Au, with elevated values of As, Sb and Bi. The program was successful in further defining and enhancing trench and drill targets within the 2 km by 100- to 250-m-wide soil geochemical anomaly.

Figure 8. *Wojtek Jakubowski of Fairfield Minerals poses with a power auger on the Mor VMS property.*

Eagle Plains Resources continued exploring in the Pelly Mountains for volcanogenic massive sulphide deposits on the **Fire** and **Ice** properties (Yukon MINFILE, 2001, 105F 071, 073). These properties are located in the northern portion of the Pelly Mountains volcanic belt, a belt of Mississippian volcanic stratigraphy, which hosts numerous VMS showings including Atna Resources' **Wolf** deposit (Yukon MINFILE, 2001, 105G 008; 4.1 Mt at 6.2% Zn, 1.8% Pb and 84 g/t Ag). Eagle Plains conducted additional staking in the region following exploration success during last season's drilling program. Drilling highlights from the 2000 program on the Fire property included a 15.1-m intersection which assayed 22.4 g/t Ag, 1529 ppm Pb and 6033 ppm Zn, including 3.3 m (approximate true thickness) grading 65.5 g/t Ag, 4930 ppm Pb and 2.15% Zn. A single hole drilled on the Ice property in 2000 intersected a thick-bedded exhalative barite unit containing numerous stratiform sulphide horizons over an approximate true thickness of 48.4 m (158.8 ft). The best mineralized interval within the barite horizon was at 56.7 m to 58.0 m, which contained 5.64% Zn, 0.17% Pb and 12.3 g/t Ag. This season's work included a regional stream sediment geochemical program followed by geological mapping and prospecting (Fig. 9). The program identified five creeks with highly anomalous base and precious metals values, and extended the package of prospective stratigraphy to

Figure 9. *Dr. Charlie Greig conducting 1:10 000-scale geology mapping in less than ideal weather conditions on Eagle Plains Resources' Pelly Mountains VMS project.*

cover an area of 20 km^2. Prospecting was successful in discovering one new showing consisting of a lens of massive pyrite with sphalerite, galena and trace chalcopyrite, which assayed 3.0 g/t Ag, 5.48% Zn, 227 ppm Cu, 368 ppm Pb, 414.4 ppm Cd, 152 ppm Hg and 353 ppm W.

Manson Creek Resources has been conducting reconnaissance and property-scale geologic programs on the **Rusty/JRS/Tanner/Nad** claims (NTS 106C/5; 106C/4, D/1; 106D/3; 106C/3) in the Kathleen Lakes area east of Keno Hill. Previous exploration has been directed at high-grade silver-lead veins and Mississippi Valley-type deposits such as the **Val-Vera** (Yukon MINFILE, 2001, 106C 083) and **Craig** (Yukon MINFILE, 2001, 106C 073) deposits. The focus of recent exploration on the properties has shifted towards the potential for sedimentary-exhalative type and volcanogenic massive sulphide (VMS) deposits. Geologic mapping has identified similar stratigraphy to that which hosts the **Marg** VMS deposit (Yukon MINFILE, 2001, 106D 009; 3.48 million tonnes grading 1.8% Cu, 2.7% Pb, 5.0% Zn, 65 g/t Ag and 1.2 g/t Au) located 50 km to the east (Fig. 10). The geological data, combined with anomalies identified in an airborne geophysical survey conducted in the 2001 season, have generated three main areas on the Rusty, JRS and Tanner claim blocks that warrant drill programs. In addition to the VMS targets, two new areas of nickel and gold mineralization have been identified on the claims. Grab sampling of heavily serpentinized ultramafic flows and associated rocks on the Nad property has consistently returned elevated nickel values in the 0.10%

Figure 10. *Water sampling of a rusty seep at the contact of black shale and overlying sericite schist. Mapping at this locality by Manson Creek Resources outlined similar stratigraphy to that hosting the Marg deposit 50 km to the east.*

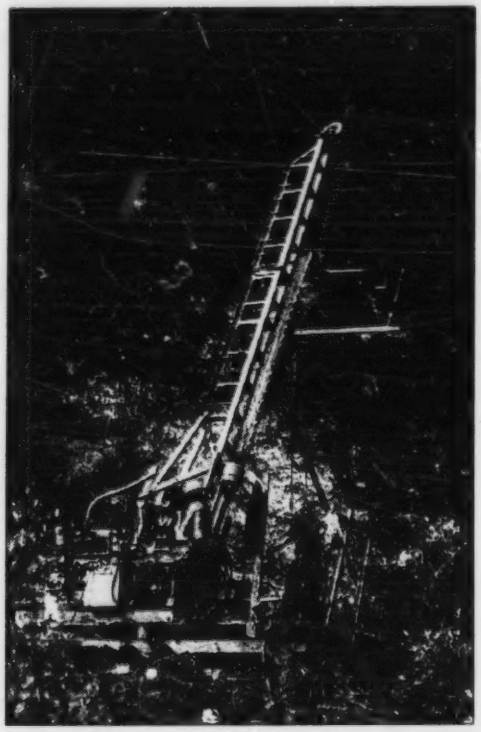

Figure 11. *Noranda Exploration conducted helicopter-supported diamond drilling on the Andrew claims.*

to 0.56% range (29 grab samples). To date, these flows have been identified over a minimum strike length of 8 km. Whole rock geochemistry indicates that the ultramafic rocks are komatiitic; pentlandite has been positively identified under petrographic examination as the nickel-bearing sulphide phase. A new gold showing has also been staked as part of the JRS property. Gold occurs in quartz-carbonate-arsenopyrite veins hosted in black shales. A grab sample of the mineralization in outcrop has returned 4.27 g/t Au, while a 3-m chip sample returned a value of 1.28 g/t Au.

Noranda Exploration optioned the **Andrew** property (Yukon MINFILE, 2001, 105K 089), east of Faro in the Selwyn Basin, from Whitehorse prospector Ron Berdahl. Exploration in the 1970s had identified silver-lead-zinc-copper veins hosted in Earn Group quartzites. Berdahl identified a large (75-m by 150-m) kill zone which returned a surface composite grab sample of 17% Zn. Hand trenching revealed stratabound mineralization at the contact of quartzites and overlying green and maroon shales. In 2001, Noranda conducted a 15-hole, helicopter-supported diamond drill program (Fig. 11) on the kill zone and other targets on the Andrew property. No results from the drilling have been publicly released.

Copper Ridge Exploration conducted a small program on the **Plata** property (Yukon MINFILE, 2001, 105N 003), optioned from Big Blackfoot Resources Ltd. The Plata is air-accessible, located in the eastern portion of the Selwyn Basin, and produced approximately 16 million g (500,000 ounces) of silver from 1983 to 1987 from high-grade silver-lead vein deposits. Copper Ridge examined the property for its potential to host sedimentary-exhalative deposits in Devonian Earn Group stratigraphy which hosts the Tom (9.3 Mt at 6.2% Zn, 7.5% Pb and 69.4 g/t Ag) and Jason (14.1 Mt at 7.1% Pb, 6.6% Zn and 79.9 g/t Ag) deposits located 100 km to the southeast.

Noranda also completed a small three-hole helicopter-supported diamond drilling program on the **Cameron** (Yukon MINFILE, 2001, 106D 012) lead-zinc-silver property east of Keno Hill, which was optioned from Whitehorse-based Tanana Exploration. No results have been released from this program.

Kluane Drilling and Norwest Enterprises continued to explore for skarn and porphyry mineralization on the **Hat** claims (Yukon MINFILE, 2001, 105D 053) in the Whitehorse Copper Belt. From 1900 to 1982, mineral production from several skarn deposits in the Copper Belt produced 123 145 041 kg Cu, 7062.4 kg Au and

85 577 kg Ag from 10 247 936 tonnes of ore. Drilling in 2000 revealed a new skarn zone that assayed 4.99% Cu, 1.05 g/t Au and 40.3 g/t Ag over 10.55 m. A single hole, drilled in 2001, 25 m up dip, at a right angle to last year's intersection, hit 2.92 m of skarn mineralization grading 3.12% Cu, 359 ppb Au and 13.8 g/t Ag. Kluane also drilled a single hole to test an Induced Polarization (IP) chargeability anomaly identified in a survey conducted in 2000 by Aurora Geosciences. The drilling intersected granodiorite with fine sheeted quartz-(calcite-) chalcopyrite-(bornite) veinlets with disseminated chalcopyrite halos (Fig. 12). Veining was developed throughout the entire hole with an 80-m section having a density of veinlets of 2 to 10 per metre. The entire section was not sampled, however, the best intersection from selected sampling assayed 1.02% Cu, 560 ppb Au and 11.2 g/t Ag over 1.37 m. The highest gold value was returned from another section, which yielded 1.76 g/t Au, 0.54% Cu and 4.4 g/t Ag over 0.97 m. The IP anomaly remains relatively untested and the new style of mineralization discovered in this recent drilling deserves further attention.

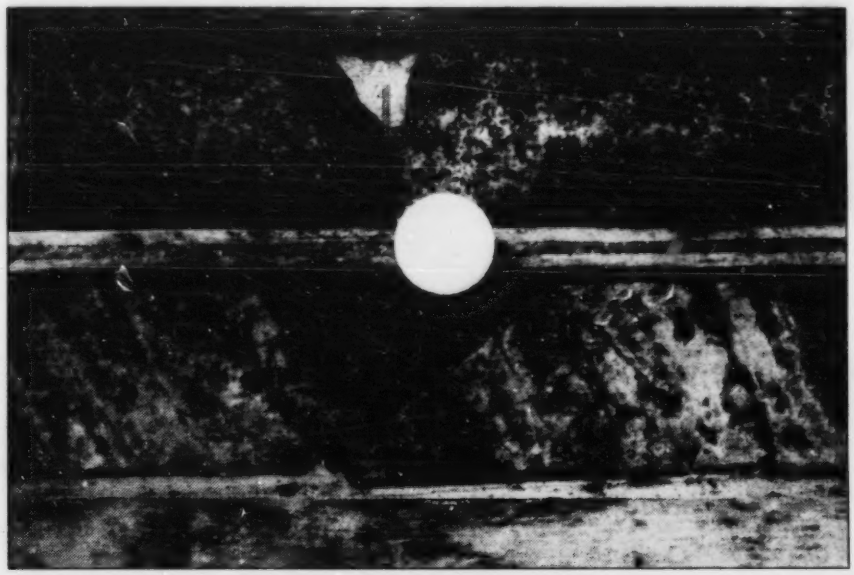

Figure 12. *Sheeted chalcopyrite and quartz-calcite veining hosted in granodiorite. The drill hole targeted an IP chargeability anomaly on the Hat claims in the Whitehorse Copper Belt.*

Wildrose Resources conducted a small program of geology and geochemistry on its **Canadian Creek** property (Yukon MINFILE, 2001, 115J 036), located in the Dawson Range in central Yukon. The company has been exploring for porphyry copper-gold-molybdenum and porphyry-gold mineralization adjacent to the Casino deposit.

Sixty miles northeast of Whitehorse, Saturn Ventures Inc. conducted a program of geology, prospecting and soil sampling on the **Mars** property (Yukon MINFILE, 2001, 105E 002). The Mars property covers the Teslin Crossing pluton, an alkalic monzonite stock of Middle Jurassic age. The copper-gold porphyry target was last explored by Placer Dome in 1997. No drilling has ever been conducted on the Mars property although several targets were outlined by Placer Dome.

Monster Copper Resources Inc. has a purchase agreement with Blackstone Ventures for the **Monster** property (Yukon MINFILE, 2001, 116B 103), located approximately 75 km north of Dawson City in the southern Ogilvie Mountains. Exploration on the property is targeting iron-oxide-associated copper-gold deposits similar to the large Olympic Dam copper-uranium-gold-silver deposit in Australia. The area is cored by the Coal Creek Inlier, an oval-shaped east-trending window of Middle and Late Proterozoic clastic rocks that have been penetrated by mineralized 'Wernecke Breccias' and cut by mafic sills and dykes. In 1994, Blackstone Resources conducted a program of geological mapping, prospecting, soil geochemistry and radiometric surveys over the whole claim block. In 2001, Monster Copper Resources conducted a program of ground geophysics, geochemistry, mapping and prospecting (Fig. 13).

Figure 13. *Iron-oxide-associated copper-gold deposits are the target on the Monster claims of Monster Copper Resources. Talus and outcrop of hematitic 'Wernecke Breccia' are visible in this photo. Tom Setterfield of Monster Copper and Al Doherty (upper middle) are sampling a copper showing in the background.*

Shawn Ryan of Dawson staked the **Hem** claims (Yukon MINFILE, 2001, 116G 082) located on a pronounced, linear, northeast-trending regional magnetic anomaly. This anomaly connects the Monster, **Olympic** (Yukon MINFILE, 2001, 116B 099) and Hem claims. The Hem claims cover a hematitic 'Wernecke Breccia' (Fig. 14) cut by mafic dykes exposed in a small window of Proterozoic clastic rocks. The Hem claims and the breccia body are bisected by the Dempster Highway, where the road cut provides a nice exposure of the breccia mineralized with disseminated chalcopyrite. The hematitic breccia can be found in a continuous exposure along a creek cut on the east side of the Blackstone River for over 1.5 km.

Copper Ridge Exploration conducted a program of due diligence sampling on the **Kalzas** tungsten-tin-silver property (Yukon MINFILE, 2001, 105M 066) south of Mayo in central Yukon. The property had been previously explored by Union Carbide in the 1980s. Wolframite occurs with minor scheelite, molybdenite, cassiterite, galena and beryl in a 1000-m by 800-m quartz stockwork cutting gritty quartzite and phyllite of the Neoproterozoic to Early Cambrian Hyland Group. The property has an extensive infrastructure of roads and is accessed via a winter road and airstrip. Copper Ridge conducted extensive sampling along road cuts, trenches and from historic drill core. Sampling within an area of 500 m by 300 m returned values from trenches of 66 m grading 0.493% WO_3, 70 m grading 0.427% WO_3, 66 m grading 0.427% WO_3, 16 m grading 0.306% WO_3, 8 m grading 0.705% WO_3, and 20 m grading 0.268% WO_3 (Fig. 15). The sampling highlights the potential of the property to host not only a large tonnage deposit, but has also revealed areas where higher grade material may be exploited. Copper Ridge is extremely encouraged by these results and is planning on further exploration, including drilling, for 2002 (see also Carlson, this volume).

Figure 14. *Ken Galambos (left), Mineral Development Geologist with the Yukon Government, examines hematitic 'Wernecke Breccia' exposed in a creek cut on Shawn Ryan's (right) Hem claims.*

Strategic Metals (formerly Nordac Resources) also conducted exploration for tungsten in Yukon, and staked and

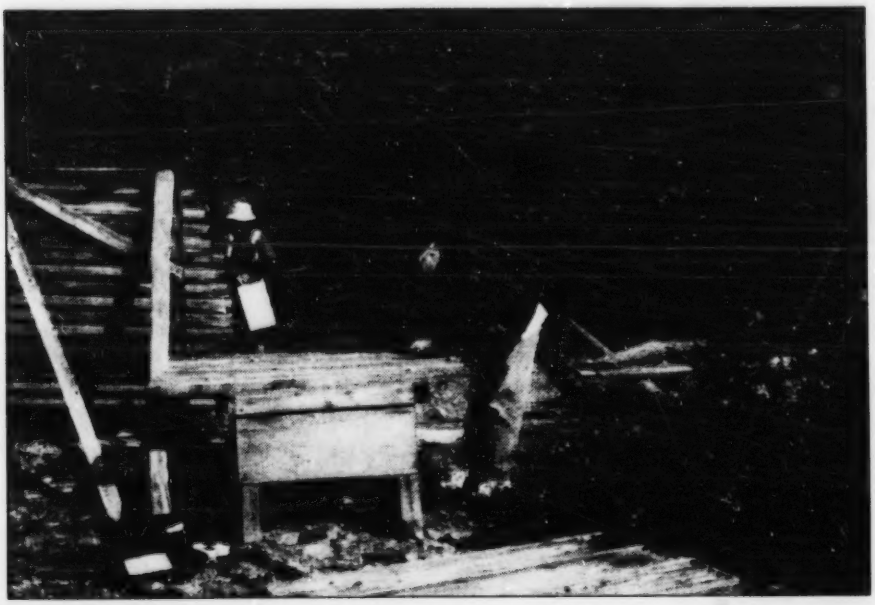

Figure 15. *Gerry Carlson (right), President of Copper Ridge Exploration, examines core drilled in 1983 by Union Carbide on the Kalzas tungsten property.*

performed small geological programs on the **Hidden** (Yukon MINFILE, 2001, 105F 092) and **Obvious** (Yukon MINFILE, 2001, 105F 094) claims. These cover areas of tungsten skarn mineralization associated with Cretaceous plutons in south-central Yukon.

PRECIOUS METALS

Canadian United Minerals, a private Yukon-based exploration company, conducted a 26-hole, 1100-m diamond drilling program on the **Horn** property (NTS 116B/7) within the boundary of the proposed Tombstone Park. The claims cover part of a roof pendant of sedimentary rocks of Devonian to Jurassic age enclosed by quartz monzonite of the Cretaceous Tombstone pluton. Pyroxene and pyrrhotite skarns containing gold, silver, copper, lead, zinc, arsenic and bismuth are developed in Permian Takhandit Formation limestone. Drilling in 2000 was directed at defining a high-grade resource in a small skarn lens that was exposed by surface trenching. The lens was drilled at 15-m centres, and the drilling outlined a resource of 6000 tonnes grading 67.2 g/t Au. The lens is open to depth. Drilling in 2001 was directed at several geophysical (magnetic) anomalies (Fig. 16) in the immediate area of the resource outlined by last years work. Several holes intersected additional skarn mineralization, but no assays have been released from this year's drilling. The company intends on applying for a winter road permit to access the claims, as well as a water license and mine production permit for the skarn deposit.

Figure 16. *Shawn Ryan conducting a magnetic survey on the Horn claims of Canadian United Minerals.*

Regent Ventures completed a 5-hole, 1280-m diamond drilling program (Fig. 17) on the **Red Mountain** property

Figure 17. *Cory Coe (upper centre) with Regent Ventures viewing core on the Red Mountain property.*

(Yukon MINFILE, 2001, 115P 006), near Mayo. Intrusive-related gold mineralization on the property is hosted in Neoproterozoic to Early Cambrian Hyland Group quartzites and hornfels proximal to small plugs of Cretaceous intrusive rocks. Drill holes intersected large zones of tourmaline breccias, tourmaline-quartz breccias and quartz-feldspar porphyry dykes. Minor quartz and quartz-sulphide mineral veins within the breccias were also intersected. One hole, DDH-01-28, intersected significant gold mineralization and returned three intersections: 9.8 m grading 1.0 g/t Au; 3.3 m grading 19.8 g/t Au (including 1 m grading 46.07 g/t Au, and 0.8 m grading 33.45 g/t Au); and 9.4 m grading 0.7 g/t Au. The onset of winter conditions forced an early closure of the program, and the drill and camp were fully winterized and remain in place for continuation of the program next year.

Atac Resouces Ltd. conducted a program of geophysics, excavator trenching, geological mapping and diamond drilling on the **Golden Revenue** property (Yukon MINFILE, 2001, 115I 042, 107) in central Yukon. The property is road accessible in a historical placer mining area within the Tintina gold belt (British Columbia and Yukon Chamber of Mines, 2000). Previous exploration on the property has identified numerous showings ranging from high-grade gold veins to larger stockwork breccia zones. The property is underlain by Paleozoic or older metamorphic rocks belonging to the Yukon-Tanana Terrane, which are extensively intruded by Mesozoic igneous rocks of the Coast Plutonic Complex. The metamorphic rocks consist of schist, gneiss, amphibole, quartzite and minor limestone. The intrusive rocks are Jurassic syenite and a Cretaceous suite comprising a granodiorite to monzonite stock cut by microgranite plugs, porphyritic dykes and a large breccia complex. Atac completed 6 diamond drill holes totaling 1201 m, 10 line-km of Induced Polarization surveys, and excavator trenching during the program. The drilling was designed to test for mineralization beneath the oxidized cap in the Nucleus zone. Drilling was successful in intersecting significant mineralization in all holes, and the deeper drilling resulted in a much better understanding of the controls on mineralization (Fig. 18).

Figure 18. *(bottom) Drilling through the oxidized cap on the Golden Revenue property of Atac Resources revealed new insights into the controls on mineralization. Company President Doug Eaton (right) disscusses findings with other geologists examining drill core.*

Mineralization appears to be associated with a series of en-echelon, moderately east-dipping quartz-feldspar porphyry dykes. The following selected results were obtained from drilling:

Hole #	From (metres)	To (metres)	Width (metres)	Gold (g/t)
DN01-01	3.05	30.70	27.65	0.84
	65.00	68.28	3.28	1.71
DN01-02	35.66	71.65	35.99	1.32
	130.76	142.95	12.19	1.82
DN01-03	58.38	75.90	17.52	1.36
	88.09	145.85	57.76	1.32
Including	121.50	138.09	16.59	2.10
DN01-04	68.07	72.85	4.78	3.30
	185.26	188.52	3.26	2.33
DN01-05	61.57	71.02	9.45	1.03
	147.70	153.13	5.43	1.24
DN01-06	120.55	128.48	7.93	1.90

The trenching program on the property was successful in discovering a new zone of vein mineralization. A quartz vein was exposed in two trenches located 120 m apart. Channel samples returned 8.89 g/t Au over 3.3 m in one trench, and 3.63 g/t Au over 9.5 m in the other.

Klondike Source Limited, a private Australian exploration company, continued to work on their **Klondike/Wedge** block of claims (NTS 115NO/14,15) optioned from Barramundi Gold. Klondike Source continued a regional-scale geochemical survey of the large claim block, using the mobile-metal-ion (MMI) geochemical analytical method of sampling. The geochemical traverses are based on a structural analysis of the property from satellite imagery and airphoto interpretation. Anomalies generated from the program correlate well with the structural interpretation and also with conventional soil anomalies for gold and arsenic, while providing a much more coherent anomalous signature. Klondike Source has based their exploration program on the Thermal Aureole Gold (TAG) model (Wall, 1999), and has generated several drill targets with the current program.

Tagish Lake Gold Corporation conducted a program of geological mapping, prospecting and diamond drilling (Fig. 19) on the **Skukum** gold/silver property, located 80 km south, by road, from Whitehorse, Yukon. The Skukum property encompasses three known gold/silver mineral deposits, **Skukum Creek** (Yukon MINFILE, 2001, 105D 022), **Mt. Skukum mine** (Yukon MINFILE, 2001, 105D 158) and **Goddell** gully (Yukon MINFILE, 2001, 105D 025), as well as numerous exploration targets. Skukum Creek is a polymetallic, shear-hosted gold-silver vein within mid-Cretaceous granodiorite of the Coast Plutonic Complex, and is the main exploration target of Tagish Lake Gold. Mt. Skukum mine consists of epithermal gold-silver veins and breccias hosted in the Eocene Mt. Skukum Volcanic Complex. The Mt. Skukum mine was in production from 1986 to 1988 and produced 2419 kg (77,790 troy ounces) of gold from 233 400 tonnes of ore. Goddell gully consists of polymetallic gold veins hosted in the Goddell shear zone within mid-Cretaceous granite of the Coast Plutonic Complex. In all, the three gold/silver mineral deposits

Figure 19. *Diamond drill rig on the Skukum Creek property of Tagish Lake Gold Corporation.*

on the Skukum property have estimated geological resources of 1.072 million tonnes grading 9.63 g/t Au and 175.21 g/t Ag, or 10.3 million g (332,000 ounces) of gold and 187.8 million g (6,039,000 ounces) of silver. Tagish Lake Gold acquired the properties by amalgamating Omni Resources and Trumpeter Yukon Gold, resulting, for the first time, in the consolidation of the three deposits under a single company.

In 2001, Tagish Lake Gold conducted drilling of four holes totaling 1502 m at targets in the Ridge Zone on the Skukum Creek property. The Ridge Zone is located along strike approximately 500 m west of the Skukum Creek deposit, and consists of two main areas of mineralization termed Zone 2 and the Ridge Zone. Previous drilling in the area intersected values up to 7.82 g/t Au and 234.3 g/t Ag over 13.0 m. The current holes cut quartz-sulphide mineral veins and breccias in Zone 2 that yielded 9.9 m grading 1.77 g/t Au and 19.2 g/t Ag, including 0.42 m grading 40.37 g/t Au and 243.3 g/t Ag. Zone 2 remains open in both directions along strike, and most significantly, down dip. Ridge Zone drilling intersected a fault zone approximately 20 m wide (true thickness), which consists of highly sheared to brecciated granodiorite, rhyolite and andesite dykes with quartz-sulphide mineral breccias and veins. Multiple intersections at a high angle to the fault zone returned assays up to 3.0 m grading 2.15 g/t Au and 160.2 g/t Ag, 1.99 m grading 1.17 g/t Au and 44.3 g/t Ag, and 2.05 m grading 3.84 g/t Au and 251.1 g/t Ag from Hole SC01-01. The Ridge Zone also remains open along strike and to depth. Long sections of the Skukum Creek deposit and Ridge Zone show an increase in thickness and grade with depth. Tagish Lake Gold plans on testing the zones at depth in 2002 by re-entering the existing underground workings and developing a proposed lower adit.

Numerous other exploration targets exist on the claims, with the main target outside the known Skukum Creek deposits being the Charleston vein. Relatively continuous chip sampling, carried out by Total Erickson Resources in 1987 along the outcropping Charleston structure, produced uncut results averaging 7.44 g/t Au and 91.6 g/t Ag over an average width of 1.36 m and a strike length of 250 m. Check sampling and geological mapping by Tagish Lake Gold confirmed previous results from the vein. The Charleston vein has never been diamond drilled and is a high priority drill target for the 2002 program.

Al Carlos of Whitehorse drilled five holes totaling 262 m on his **Grew Creek** property (Yukon MINFILE, 2001, 105K 009), an Eocene epithermal gold-silver deposit near Faro. The deposit hosts a drill-indicated geological resource of 773 012 tonnes grading 8.9 g/t Au and 33.6 g/t Ag (Christie, 1992). Al has been conducting extensive compilation work on the property, and in 2000 conducted a geochemical survey using the Enzyme Leach Process on targets outside of the main Grew Creek

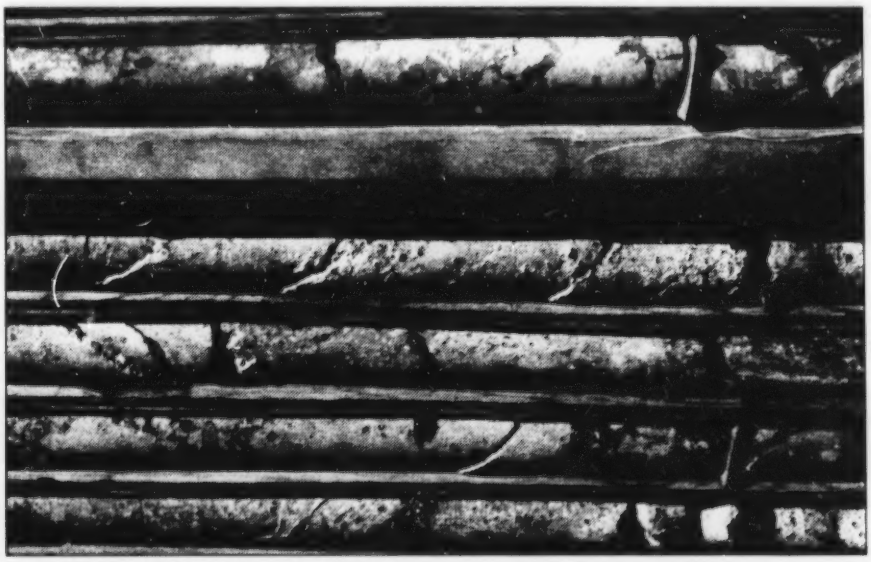

Figure 20. *Hydrothermal breccia intersected in drilling on the Grew Creek property of Whitehorse prospector, Al Carlos. Quarter for scale.*

deposit. Several anomalies were outlined with the survey that were supported by historical airborne geophysical data, conventional geochemistry and prospecting. Drilling was successful in intersecting an intriguing siliceous hydrothermal breccia (Fig. 20). Assays on the core returned low values for gold, however, additional work to locate mineralized phases of the breccia will be conducted in 2002.

Tanana Exploration Inc. followed up on a highly anomalous till geochemical sample (Fig. 21) released by Jeff Bond (Bond, 2001) of the Yukon Geology Program in 2000. Bond's sample JB00-155 contained 28.9 ppb Au, 484.5 ppm As, 151.4 ppm Sb, 21,020 ppm Hg, 1 ppm Tl and 1374 ppm Ag. The sample was taken from a mudflow-like deposit on a small peninsula next to a lake. The soil at the site was highly oxidized. Tanana staked the area as the **Spice** claims (NTS 105G/13) in early 2001 and performed soil sampling, prospecting and hand trenching. The claims are covered by a thin continuous blanket of Quaternary cover, which limits outcrop exposure in the area. Recent mapping by Don Murphy of the Yukon Geology Program indicates that the claims are underlain by Permian-aged quartzite and conglomerate of the Yukon Tanana Terrane. High-level quartz porphyritic felsic dykes were also noted by Murphy on the claims (D. Murphy, pers. comm., 2001). Soil sampling by Tanana Exploration indicated a linear soil geochemical anomaly with values up to 316 ppb Au, 959 ppm As, 256 ppm Sb and 37,551 ppb Hg. Follow-up work by Bond in 2001 included more detailed till sampling on the Spice claims. Results included a gold value of 13,891 ppb with coincident anomalous silver, arsenic, antimony and mercury. Detailed results are presented in Bond, 2002 (this volume).

Figure 21. *Geochemical till sampling on the Spice claims.*

Northern Platinum Ltd. conducted a program of geology, geochemistry, geophysics, underground rehabilitation, trenching and diamond drilling on their **Wellgreen** property (Yukon

MINFILE, 2001, 115G 024) in the Kluane Mafic-Ultramafic Belt (Hulbert, 1997), in western Yukon. The Wellgreen nickel-copper mine was operated by Hudson Bay Mining and Smelting from 1972 to 1973. Hudson Bay's early drilling outlined 669 150 tonnes grading 2.04% Ni, 1.42% Cu, 0.07% Co, 1.3 g/t Pt, 0.93 g/t Pd and 0.17 g/t Au, contained in massive sulphide lenses along the footwall contact of the Quill Creek Complex. Drilling in 1987 and 1988 by Kluane Joint Venture expanded the resource to include disseminated sulphides in the basal gabbro and overlying peridotite. Current resources are estimated at 49.9 million tonnes grading 0.36% Ni, 0.35% Cu, 0.51 g/t Pt and 0.34 g/t Pd. In the current program, six holes were drilled in the vicinity of the Wellgreen deposit. Drill hole WGS 01-144 intersected 37.0 m grading 0.19% Cu, 0.32% Ni, 0.014% Co, 0.31 g/t Pt, 0.43 g/t Pd and 0.03 g/t Au near surface, and an additional 17.1 m grading 0.15% Cu, 0.17% Ni, 0.01% Co, 0.22 g/t Pt, 0.32 g/t Pd and 0.05 g/t Au deeper in the hole. Hole WGS 01-145 was collared in mineralization and intersected 13.9 m grading 0.37% Cu, 0.25% Ni, 0.013% Co, 0.56 g/t Pt, 0.71 g/t Pd and 0.09 g/t Au, and deeper in the hole, an additional 10.2 m grading 0.23% Cu, 0.36% Ni, 0.02% Co, 0.44 g/t Pt, 0.70 g/t Pd and 0.06 g/t Au. Soil sampling, prospecting and self-potential geophysical surveys by Dave Javorsky (Fig. 22) on the Arch claims 3 km west of the Wellgreen deposit exposed significant new mineralization. Chip sampling across the new SP showing yielded 10.3 m grading 1.24% Cu, 1.34% Ni, 0.065% Co, 0.9 g/t Pt and 1.2 g/t Pd, including 3.5 m grading 2.08% Cu, 3.18% Ni, 0.15% Co, 2.71 g/t Pt, 3.46 g/t Pd and 0.37 g/t Au. One hole was drilled under the showing which intersected similar grading material returning 14.5 m of 0.45% Cu, 0.43% Ni, 0.019% Co, 0.38 g/t Pt and 0.55 g/t Pd, including a higher grade intersection of 1.6 m grading 2.92% Cu, 1.54% Ni, 0.058% Co, 1.31 g/t Pt, 1.89 g/t Pd and 0.14 g/t Au. The discovery of the SP showing on the Arch claims highlights the potential of the entire Kluane Mafic-Ultramafic Belt considering that a significant new showing can be found on the most advanced property in the belt.

Uravan Minerals completed a program of geophysics (max-min, induced polarization), prospecting, mapping, hand-trenching and sampling on the **Canalask-**

Figure 22. *David Javorsky, prospector, indicates the size potential of his newly discovered SP showing on the Arch claims of Northern Platinum Resources.*

Onion property (Yukon MINFILE, 2001, 115K 077), optioned from Expatriate Resources. The property covers the White River intrusive complex, the second largest mafic-ultramafic body located in the Kluane Mafic-Ultramafic Belt. Uravan concentrated its work along a 5-km length of the most northwestern section of the complex. Previous work had identified areas of Ni-Cu-PGE mineralization in marginal gabbros in the basal section of the ultramafic body in the Discovery-Onion and Sax-Cessna areas. Hand trenching in the footwall of the White River intrusive complex exposed the base of the sill in several areas. Assays up to 4.69% Ni, 0.79% Cu, 0.17% Co and 6.83 g/t PGEs, including >4 g/t Os, Re, Rh, Ir, were obtained. In the areas of the Discovery-Onion Southeast (Fig. 23) and Sax-Cessna surface mineral occurrences, two exceptionally strong max-min conductors with coincident strong Induced Polarization (IP) chargeability-resistivity anomalies were delineated within the footwall of the complex and along strike from the known outcropping mineralization. These geophysical anomalies have strike lengths of over 800 m and 1100 m, respectively. Uravan interprets these strong geophysical responses as semi-massive to massive sulphide. The strong coincident max-min/IP geophysical anomalies occur at or near the base of the steeply dipping ultramafic sill and coincide with a pronounced thickening or embayment of the sill. Hulbert (1997) identified basal embayments within the White River intrusive complex as high priority areas for exploration. High-grade Ni-Au values occurring at the Onion SE showing, assaying 27.4% Ni and 30.6 g/t Au, are related to a later hydrothermal episode that overprinted the main Ni-Cu-Co-PGE magmatic ultramafic-hosted mineralization. Uravan intends on drilling the property in 2002.

Figure 23. *Uravan Minerals conducted a program of geology, geochemistry and geophysics on the Canalask-Onion property optioned from Expatriate Resources. Jim Barr with Aurora Geosciences examines Ni-Cu-PGE mineralization exposed in hand trenching on the Discovery showing.*

In the southern portion of the Kluane belt, Yukon prospector Tom Morgan restaked the **Ultra** showing (Yukon MINFILE, 2001, 115B 008). Tom conducted prospecting, mapping, sampling and magnetic surveys on the claims. Two types of mineralization are evident on the property: magmatic Ni-Cu-PGE associated with gabbro dykes, and enigmatic massive sulphide boulders exposed on a terminal moraine. The property is underlain by volcanic and sedimentary rocks of the Permian Station Creek Formation. Gabbro dykes are 2-4 m wide, and chip sampling returned values up to 1.66% Cu, 6420 ppm Ni, 1970 ppb Pd, 203 ppb Pt and 240 ppb Au over 1 m. A cluster of seven massive sulphide boulders over a 50-m area returned a composite assay of 2.7% Cu, 4.1% Zn, 69 ppb Au and 43.2 ppm Ag. The boulders consist of banded fine-grained pyrite with lesser sphalerite, chalcopyrite, quartz, carbonate and minor galena. Previous workers proposed a source for the mineralization to be a massive sulphide lens in andesite exposed in a cliff face 5 km away.

GEMSTONES

True North Gems optioned the **Regal Ridge** emerald property (NTS 105G/7) from Expatriate Resources in 2001. True North obtained a Mining Land Use Permit to walk an excavator to the property. The excavator was walked from the end of the Kudz Ze Kayah access road to the emerald showings, a distance of approximately 15 km. The excavator was used to develop access trails, conduct stripping, trench, and facilitate sampling and mapping of the emerald showings (Fig. 24). Property geology consists of Mississippian meta-gabbro and chlorite schist of the Fire Lake mafic metavolcanic unit intruded by ultramafic rocks, Cretaceous granite and Tertiary feldspar porphyry dykes. Emeralds occur in stacked or near horizontal bands of 'golden schist' containing sub-parallel quartz-tourmaline veins or pods. The golden schists are brownish-weathering chlorite-sericite schists, which host coarse mica and emerald near the selvages of quartz veins. Trenching revealed vertical joints intersecting the golden schist horizons and hosting emerald mineralization. True North interprets the joints as conduits for the mineralizing fluids. Soil geochemistry was utilized to direct trenching and was successful in identifying three new areas of mineralization. Emeralds collected from trenches during the 2001 program were larger and of excellent colour, indicating that the effects of near-surface weathering has been responsible for degradation and fracturing of many previously recovered crystals. True North is very encouraged with this year's results and is planning on an expanded program for 2002.

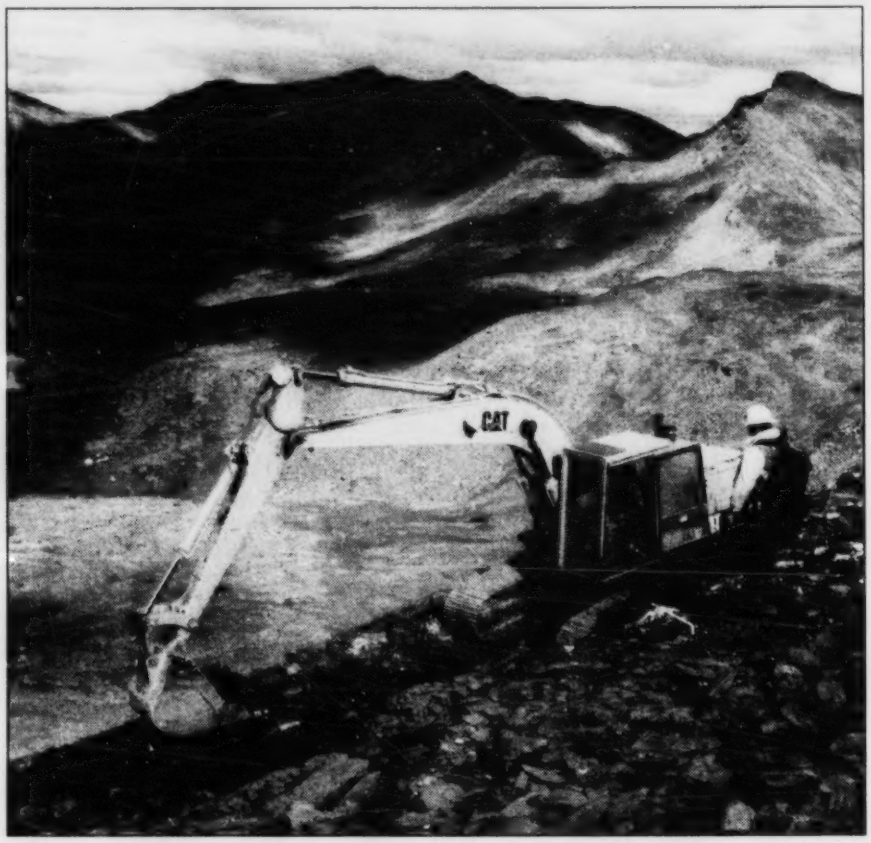

Figure 24. *Bernie Gaboury of True North Gems directs excavator trenching on the Regal Ridge emerald property. Photo by Brad Wilson, True North Gems.*

ACKNOWLEDGEMENTS

This report is based on public information gathered from a variety of sources. It also includes information provided by companies through press releases, property summaries provided to the department, and from property visits conducted in the 2001 field season. The cooperation of companies in providing information, as well as their hospitality and access to the property during field tours are gratefully acknowledged. Editing by Leyla Weston and Diane Emond is greatly appreciated.

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APPENDIX 1: 2001 EXPLORATION PROJECTS

BS - Bulk Sample
D - Development
DD - Diamond Drilling
ES - Environmental Studies
F - Feasibility
G - Geology
GC - Geochemistry
GP - Geophysics
M - Mining
P - Prospecting
PD - Percussion Drilling
PF - Prefeasibility
R - Reconnaissance
T - Trenching
U/GD - Underground Development

PROPERTY	COMPANY/OWNER	MINING DISTRICT	MINFILE # or (1:50 000 NTS)	WORK TYPE	COMMODITY
Andrew	Noranda Exploration	Whitehorse	105K 089	G,GC,DD	Zn-Pb-Ag
AR	Auterra Ventures Inc	Whitehorse	115G 026	G,GC,T	PGE,Cu,Ni
Brewery Creek	Viceroy Resources	Dawson	116B 160	M	Au
Cameron	Noranda/Tanana Exploration	Mayo	106D 012	G,DD	Zn-Pb-Ag
Canadian Creek	Wildrose Resources	Whitehorse	115J 036	G,GC	Cu-Au
Canalask-Onion	Uravan/Expatriate Resources	Whitehorse	115K 077	G,GC,GP,T	Ni-Cu-PGE
Clear Creek	Redstar/Newmont Exploration	Mayo	115P 012,013	G,GC	Au
Fire/Ice	Eagle Plains Resources	Watson Lake	105F 071,073	G,GC	Pb-Zn-Ag
Goal Net	Expatriate Resources	Watson Lake	105G 123	G,GC,DD	Pb-Zn-Cu-Ag-Au
Golden Revenue	ATAC/YKR International	Whitehorse	115I 042,107	G	Cu-Au-Ag-WO_3-MoS_2
Grew Creek	Al Carlos	Whitehorse	105K 009	DD	Au-Ag
Hat (Whitehorse Copper)	Kluane Drilling/Norwest Enterprises	Whitehorse	105D 053	G,DD	Cu-Au-Ag
Hem	Shawn Ryan	Dawson	116G 082	G,GC	Cu-Au
Hidden/Obvious	Strategic Metals	Watson Lake	105F 092,094	G,GC	WO_3
Horn	Canadian United Minerals	Dawson	(116B/7)	G,DD	Au-Cu
Hyland Gold	Cash Resources	Watson Lake	95D 011	G,GC	Au
Jade	Cash Resources	Dawson	116G 062	G,GC	Barite
Kalzas	Copper Ridge	Mayo	105M 066	G,GC	WO_3
Keno Hill	A.M.T. Canada	Mayo	105M 001	D	Ag-Pb-Zn
Klondike/Wedge	KSL Limited/Barramundi Resources	Dawson	(115NO/14,15)	G,GC	Au
Mars	Saturn Ventures Inc.	Whitehorse	105E 002	G,GC	Cu-Au
Minto	Minto Exploration	Whitehorse	115I 021,022	DD,D	Cu-Ag-Au
Mitchell	JAE Resources	Dawson	115O 068	T	Au
Monster	Monster Copper Resources	Dawson	116B 003	G,GC,P,GP	Cu-Au
Mor	Fairfield Minerals	Watson Lake	(105C/1)	G,GC	Pb-Zn-Ag-Cu
OM/Tom	Carta Resources	Dawson	115N 042	G,GC	Cu-Pb-Zn-Ag-Au
Plata	Copper Ridge Exploration	Watson Lake	105N 003	G,GC	Pb-Zn-Ag
Puck (Wolverine)	Expatriate/Atna Resources	Watson Lake	105G 073	G,GC,DD	Pb-Zn-Cu-Ag-Au
Red Mountain	Regent Ventures	Mayo	115P 006	G,DD	Au
Regal Ridge	True North Gems/Expatriate	Watson Lake	(105G/07)	G,GC,T	Emeralds
Rusty/JRS/ Tanner/Nad	Manson Creek Resources	Mayo	(106C/5; C/4; D/3)	G,GC,GP	Zn-Pb-Ag
Rusty Springs	Eagle Plains Resources	Dawson	116K 003	G,GC	Ag-Cu-Zn-Pb
Skukum	Tagish Lake Gold	Whitehorse	105D 022,025,158	G,GC,DD	Au-Ag
Spice	Tanana Exploration	Watson Lake	(105G/13)	G,GC,T	Au
Ultra	Tom Morgan	Whitehorse	115B 008	G,GC	Ni-Cu-PGE; Cu-Zn-Au-Ag
Wellgreen	Northern Platinum	Whitehorse	115G 024	G,GC,GP,DD	Ni-Cu-PGE
Regional reconnaissance	Hudson Bay	Watson Lake	Selwyn Basin	G,GC	Zn-Pb-Ag

APPENDIX 2: 2001 DRILLING STATISTICS

PROPERTY	COMPANY	DIAMOND DRILL	
		METRES	# HOLES
Andrew	Noranda Exploration	2789	15
Cameron	Noranda/Tanana Exploration	(included in total for Andrew)	3
Goal Net	Expatriate Resources	1560.6	9
Grew Creek	Al Carlos	262	5
Golden Revenue	ATAC Resources	1201	6
Hat (Whitehorse Copper)	Kluane Drilling/Norwest Enterprises	611	3
Horn	Canadian United Minerals	1100	26
Minto	Minto Exploration	552	5
Puck (Wolverine)	Expatriate/Atna Resources	220	1
Red Mountain	Regent Ventures	1280	5
Skukum Creek	Tagish Lake Gold	1502	4
Tay-LP	Newmont/Ross River Gold	1213	11
Wellgreen	Northern Platinum Ltd.	593.4	7
TOTAL		**12 884**	**100**

YUKON PLACER MINING OVERVIEW, 2001

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Yukon Geology Program

LeBarge, W., 2002. Yukon Placer Mining Overview, 2001. *In:* Yukon Exploration and Geology 2001, D.S. Emond, L.H. Weston and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 27-28.

SUMMARY

Placer mining in the Yukon continued to be an important industry in 2001 despite low precious metal prices and steadily declining mineral exploration activity. A total of 124 mines were operating in 2001, with approximately 400 people directly employed in the industry. This represents a 12% decrease in the number of operating mines from the 2000 mining season. There are, however, many jobs generated annually in the service and hospitality industries due to seasonal placer mining activity, especially in and near the communities of Dawson and Mayo. As usual, the majority of active mining operations were in the Dawson Mining District (78) followed by the Whitehorse Mining District (33) and the Mayo Mining District (13).

For 2001, over 85% of the Yukon's placer gold was produced in the Dawson Mining District, which includes the unglaciated drainages of Klondike River, Indian River, west Yukon River (Fortymile, Sixtymile, Moosehorn) and lower Stewart River. The remaining gold came from glaciated regions, including Clear Creek, Mayo, Dawson Range, Kluane and Livingstone. Increases in placer gold production were seen in the Klondike (Hunker and Last Chance creeks), lower Stewart (Black Hills and Thistle creeks) and Kluane (Gladstone and Fourth of July creeks) areas, while decreases in production were noted in all other regions.

Placer gold production in 2001 totalled 70,813 crude ounces (2202.5 kg), compared to 76,507 crude ounces (2379.6 kg) in 2000, which represents a 15% decrease (Fig. 1). In the last two years, placer gold production has dropped 26% to its lowest level since 1979. The total dollar value of Yukon placer gold also dropped in 2001, down to $23.7 million from the $25.3 million generated in 2000. The continuing low price of gold and high fuel prices once again made for difficult economic conditions for the Yukon's placer mining industry.

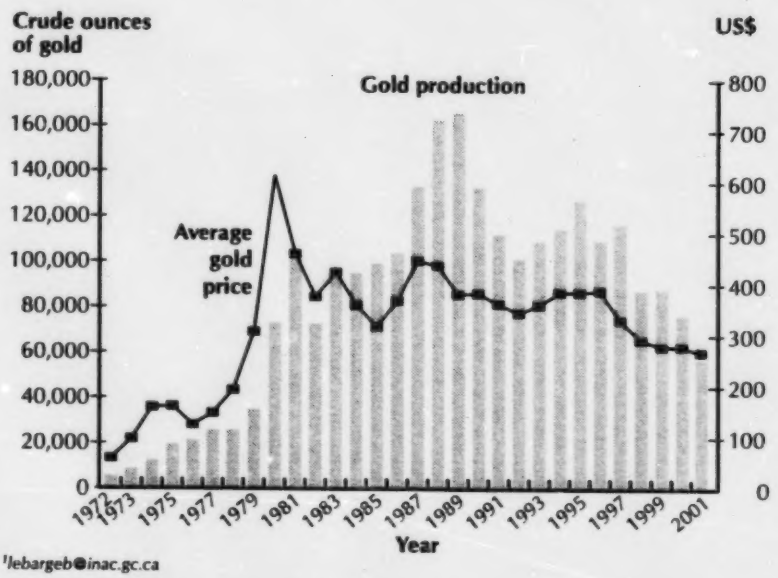

Figure 1. *Yearly gold production figures and average US gold price, 1972-2001, for the Yukon.*

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APERÇU DES PLACERS DU YUKON, 2001

En 2001, l'exploitation de placers constitue toujours une importante industrie au Yukon et ce, même si les prix des métaux précieux sont bas et l'exploration minérale décline régulièrement. En 2001, 124 mines au total étaient en exploitation, et environ 400 personnes occupaient des emplois directement liés à l'industrie minière; cela représente une chute de 12 % du nombre de mines exploitées par rapport à la saison minière 2000. Cependant, l'exploitation saisonnière de placers créé un grand nombre d'emplois chaque année dans les industries des services et du tourisme, en particulier dans les communautés de Dawson et de Mayo ainsi que dans leurs environs. Comme d'habitude, la majeure partie des activités minières se sont concentrées dans les districts miniers de Dawson (78), de Whitehorse (33) et de Mayo (13).

En 2001, plus de 85 % de l'or placérien du Yukon a été extrait dans le district minier de Dawson, où l'on trouve les bassins versants non glaciés de la rivière Klondike, de la rivière Indian, de l'ouest du Yukon (Fortymile, Sixtymile et Moosehorn) et de la basse Stewart. Les 15 % restants provenaient de régions glaciaires, dont celles du ruisseau Clear, de la rivière Mayo, de la chaîne Dawson, de la rivière Kluane et du ruisseau Livingstone. La production d'or placérien s'est accrue dans les régions de la rivière Klondike (ruisseaux Hunker et Last Chance), de la basse Stewart (ruisseaux Black Hills et Thistle) et de la rivière Kluane (ruisseaux Gladstone et Fourth of July), alors qu'elle a chuté dans toutes les autres régions.

En 2001, un total 70 813 onces troy (2202.5 kg) d'or placérien ont été extraites, comparativement à 76 507 onces troy (2379.6 kg) en 2000, ce qui représente une chute de 15 %. Au cours des deux dernières années, l'exploitation de placers aurifères a chuté de 26 % et atteint sont plus bas niveau de production depuis 1979. La valeur total de l'or placérien du Yukon a également diminué, en passant de 25,3 millions de dollars générés en 2000 à 23,7 millions de dollars en 2001. Le prix de l'or est toujours bas et celui du carburant est encore élevé, ce qui constitue une fois de plus des conditions économiques défavorables pour l'industrie de l'exploitation de placers du Yukon.

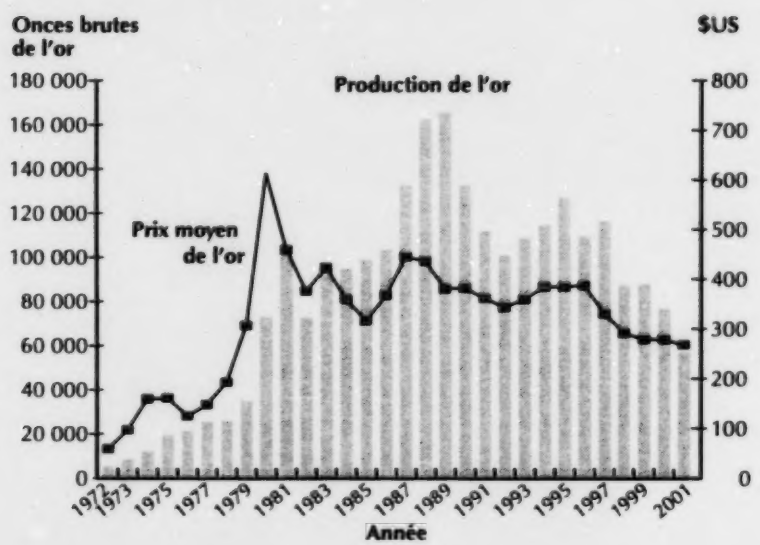

Figure 1. *Production annuelle d'or et prix moyen de l'or en $US au Yukon, entre 1972 et 2001.*